In the claims:

1. (currently amended) A method for encoding a digital signal into a scalable bitstream comprising:

quantizing the digital signal, and encoding the quantized signal to form a core-layer bitstream;

performing an error mapping based on the digital signal and the core-layer bitstream to remove information that has been encoded into the core-layer bitstream, resulting in an error signal;

bitplane coding the error signal based on perceptual information of the digital signal, resulting in an enhancement-layer bitstream, wherein the perceptual information of the digital signal is determined using a perceptual model; ~~and~~

multiplexing the core-layer bitstream and the enhancement-layer bitstream, thereby generating the scalable bitstream;

wherein the error signal is represented in bitplanes comprising a plurality of bitplane symbols, and wherein the bitplanes are shifted based on the perceptual information of the digital signal, such that bitplanes which are more perceptually important are coded first when the bitplanes are scanned and coded in a consecutive sequence during bitplane coding of the error signal;

wherein at least one of the following information is determined as the perceptual information of the digital signal by the perceptual model[:]; and

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) ~~of the error signal at which the bit-plane coding of the error signal starts M(s)~~ that contains a non-zero bit-plane symbol for the frequency band s of the error signal.

2. (original) The method of claim 1, further comprising:

transforming the digital signal into a suitable domain, wherein the transformed signal is quantized to form the quantized signal before encoding the quantized signal.

3. (previously amended) The method of claim 1 wherein the perceptual information of the digital signal is further multiplexed with the core-layer bitstream and the enhancement-layer bitstream to generate the scalable bitstream.

4. (original) The method of claim 2, wherein the digital signal is transformed to a transformed digital signal using an integer Modified Discrete Cosine Transform.

5. (original) The method of claim 4, wherein the transformed signal is normalized to approximate the output of a MDCT filterbank.

6. (previously amended) The method of claim 1 wherein the digital signal or the transformed digital signal is quantized and encoded according to the Moving Pictures Expert Group (MPEG) Advanced Audio Coding (AAC) specification.

7. (previously amended) The method of claim 1 wherein the error mapping is performed by subtracting the lower quantization threshold corresponding to each quantized value of the quantized

signal from the digital signal or the transformed digital signal, thereby generating the error signal.

8. (previously amended) The method of claim 1 wherein the psychoacoustic model is used as the perceptual model for determining the perceptual information of the digital signal.

9. (cancelled)

10. (cancelled).

11. (previously amended) The method of claim 1 wherein at least the following information is determined as the perceptual information of the digital signal by the perceptual model:

the Just Noticeable Distortion (JND) level of the digital signal, wherein s correspond to a frequency band of the digital signal or the transformed digital signal.

12. (original) The method of claim 11, wherein perceptual significance Ps(s) of the digital signal is further determined as the perceptual information, the perceptual significance is determined by:

determining the bitplane of the error signal corresponding to the JND level of the digital signal,

subtracting the bitplane of the error signal corresponding to the JND level of the digital signal from the bitplane of the error signal which the bitplane coding of the error signal starts M(s), thereby determining the perceptual significance Ps(s), wherein the perceptual significance Ps(s) is used to control the scanning and

coding sequence of at least the bitplanes or the bitplane symbols of the bitplanes.

13. (original) The method of claim 12, wherein the perceptual significance Ps(s) is normalized by:

defining a common perceptual significance Ps(s)_common based on a function of the perceptual significance Ps(s); and

subtracting the common perceptual significance Ps(s)_common from the perceptual significance Ps(s), thereby generating the normalized perceptual significance Ps'(s),

wherein for frequency band s for which the quantized values are not all zero, the value of the perceptual significance Ps(s) is set to the value of the common perceptual significance Ps_common, and

wherein for frequency band s for which the quantized values are all zero, the normalized perceptual significance Ps'(s) is multiplexed with the core layer bitstream and the enhancement layer bitstream to generate the scalable bitstream.

14. (previously amended) The method of claim 11, wherein the bitplane of the error signal which the bitplane coding of the error signal starts is determined from the quantization step size used in the frequency band s for quantizing the digital signal or the transformed signal.

15. (currently amended) A encoder for encoding a digital signal into a scalable bitstream, comprising:

a quantization unit for quantizing the digital signal, and encoding the quantized signal to form a core-layer bitstream;

an error mapping unit for performing an error mapping based on the digital signal and the core-layer bitstream to remove information that has been encoded into the core-layer bitstream, resulting in an error signal;

a perceptual bitplane coding unit for bitplane coding the error signal based on perceptual information of the digital signal, resulting in an enhancement-layer bitstream, wherein the perceptual information of the digital signal is determined using a perceptual model; ~~and~~

a multiplexing unit for multiplexing the core layer bitstream and the enhancement layer bitstream, thereby generating the scalable bitstream;

wherein the error signal is represented in bitplanes comprising a plurality of bitplane symbols, and wherein the bitplanes are shifted based on the perceptual information of the digital signal, such that bitplanes which are more perceptually important are coded first when the bitplanes are scanned and coded in a consecutive sequence during bitplane coding of the error signal;

wherein at least one of the following information is determined as the perceptual information of the digital signal by the perceptual model[:]; and

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) ~~of the error signal at which the bit-plane coding of the error signal starts M(s)~~ that contains a non-zero bit-plane symbol for the frequency band s of the error signal.

16. (currently amended) A computer readable medium, having a program recorded thereon, wherein the program, when executed by a computer, makes the computer perform a procedure for encoding a digital signal into a scalable bitstream, the procedure comprising:

quantizing the digital signal, and encoding the quantized signal to form a core layer bitstream;

performing an error mapping based on the digital signal and the core layer bitstream to remove information that has been encoded into the core layer bitstream, resulting in an error signal;

bitplane coding the error signal based on perceptual information of the digital signal, resulting in an enhancement layer bitstream, wherein the perceptual information of the digital signal is determined using a perceptual model; ~~and~~

multiplexing the core layer bitstream and the enhancement layer bitstream, thereby generating the scalable bitstream;

wherein the error signal is represented in bitplanes comprising a plurality of bitplane symbols, and wherein the bitplanes are shifted based on the perceptual

information of the digital signal, such that bitplanes which are more perceptually important are coded first when the bitplanes are scanned and coded in a consecutive sequence during bitplane coding of the error signal;

wherein at least one of the following information is determined as the perceptual information of the digital signal by the perceptual model[:]; and

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) ~~of the error signal at which the bit-plane coding of the error signal starts M(s)~~ that contains a non-zero bit-plane symbol for the frequency band s of the error signal.

17. (cancelled)

18. (currently amended) A method for decoding a scalable bitstream into a digital signal comprising:

demultiplexing the scalable bitstream into a core layer bitstream and an enhancement layer bitstream;

decoding and dequantizing the core layer bitstream to generate a core layer signal;

bitplane decoding the enhancement layer bitstream based on perceptual information of the digital signal; ~~and~~

performing an error mapping based on the bitplane decoded enhancement layer bitstream and the dequantized core layer signal, resulting in a reconstructed transformed signal, wherein the reconstructed transformed signal is the digital signal;

wherein the enhancement-layer bitstream is bit-plane decoded to generate a plurality of bit-planes comprising a plurality of bit-plane symbols in a consecutive sequence, and the bit-planes are shifted based on the perceptual information of the digital signal to generate the bit-plane decoded enhancement-layer bitstream;

wherein at least the following information is received as the perceptual information of the digital signal[:]; and

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) that contains a non-zero bit-plane symbol for the frequency band s of the error signal ~~the bit-plane which corresponds to the enhancement-layer bitstream when the bit-plane decoding of the enhancement-layer bitstream starts, which bit-plane is specified by a number M(s)~~.

19. (original) The method of claim 18, further transforming the reconstructed transformed signal into a reconstructed signal, wherein the reconstructed signal is the digital signal.

20. (previously amended) The method of claim 18 wherein the perceptual information of the digital signal is obtained from the demultiplexing of the scalable bitstream.

21. (previously amended) The method of claim 19 wherein the core layer signal and the enhancement layer signal are transformed using an integer Modified Discrete Cosine Transform (MDCT).

22. (previously amended) The method of claim 18 wherein the core layer bitstream is decoded and dequantized according to the

Moving Pictures Expert Group (MPEG) Advanced Audio Coding (AAC) specification.

23. (previously amended) The method of claim 18 wherein the error mapping is performed by adding the lower quantization threshold used for dequantizing the transformed signal and the bitplane decoded enhancement layer bitstream, thereby generating the enhancement layer signal.

24. (cancelled)

25. (cancelled)

26. (previously amended) The method of claim 18 wherein at least the following information is received as the perceptual information of the digital signal:

the Just Noticeable Distortion (JND) level of the digital signal, wherein s correspond to a frequency band of the digital signal.

27. (previously amended) The method of claim 26, wherein the bitplane which corresponds to the enhancement-layer bitstream when the bitplane decoding of the enhancement-layer bitstream starts M(s) is determined from the quantization step size used in the frequency band s for dequantizing the core-layer bitstream.

28. (currently amended) A decoder for decoding a scalable bitstream into a digital signal comprising:

a demultiplexing unit for demultiplexing the scalable bitstream into a corelayer bitstream and an enhancementlayer bitstream;

a dequantization unit for decoding and dequantizing the corelayer bitstream to generate a corelayer signal;

a bitplane decoding unit for bitplane decoding the enhancementlayer bitstream based on perceptual information of the digital signal; ~~and~~

an error mapping unit for performing an error mapping based on the bitplane decoded enhancementlayer bitstream and the dequantized corelayer signal, resulting in a reconstructed transformed signal, wherein the reconstructed transformed signal is the digital signal;

wherein the enhancement-layer bitstream is bit-plane decoded to generate a plurality of bit-planes comprising a plurality of bit-plane symbols in a consecutive sequence, and the bit-planes are shifted based on the perceptual information of the digital signal to generate the bit-plane decoded enhancement-layer bitstream;

wherein at least the following information is received as the perceptual information of the digital signal[:]; and

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) that contains a non-zero bit-plane symbol for the frequency band s of the error signal~~the bit-plane which corresponds to the enhancement-layer bitstream when the bit-plane decoding of the enhancement-layer bitstream starts, which bit-plane is specified by a number M(s)~~.

29. (currently amended) A computer readable medium, having a program recorded thereon, wherein the program, when executed by

a computer, makes the computer perform a procedure for decoding a scalable bitstream into a digital signal, the procedure comprising:

demultiplexing the scalable bitstream into a corelayer bitstream and an enhancementlayer bitstream;

decoding and dequantizing the corelayer bitstream to generate a corelayer signal;

bitplane decoding the enhancementlayer bitstream based on perceptual information of the digital signal; ~~and~~

performing an error mapping based on the bitplane decoded enhancementlayer bitstream and the dequantized corelayer signal, resulting in a reconstructed transformed signal, wherein the reconstructed transformed signal is the digital signal;

wherein the enhancement-layer bitstream is bit-plane decoded to generate a plurality of bit-planes comprising a plurality of bit-plane symbols in a consecutive sequence, and the bit-planes are shifted based on the perceptual information of the digital signal to generate the bit-plane decoded enhancement-layer bitstream;

wherein at least the following information is received as the perceptual information of the digital signal[:]; and

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) that contains a non-zero bit-plane symbol for the frequency band s of the error signal ~~the bit-plane which corresponds to the enhancement-layer bitstream when the bit-plane decoding~~

~~of the enhancement-layer bitstream starts, which bit-plane is specified by a number M(s)~~.

30. (cancelled)

31. (currently amended) The method of claim 1[0], wherein at least one of the following information is determined as the perceptual information of the digital signal by the perceptual model:

the bit-plane of the error signal which the bit-plane coding of the error signal starts M(s); and

the Just Noticeable Distortion (JND) level of the digital signal, wherein s correspond to a frequency band of the digital signal or the transformed digital signal.

32. (currently amended) The method of claim [25] 18, wherein at least one of the following information is received as the perceptual information of the digital signal:

the bit-plane which corresponds to the enhancement-layer bitstream when the bit-plane decoding of the enhancement-layer bitstream starts, which bit-plane is specified by a number M(s); and

the Just Noticeable Distortion (JND) level of the digital signal, wherein s correspond to a frequency band of the digital signal.

33. (currently amended) A method for encoding a digital signal into a scalable bitstream comprising:

quantizing the digital signal, and encoding the quantized signal to form a core-layer bitstream;

performing an error mapping based on the digital signal and the core-layer bitstream to remove information that has been encoded into the core-layer bitstream, resulting in an error signal;

bit-plane coding the error signal based on perceptual information of the digital signal, resulting in an enhancement-layer bitstream, wherein the perceptual information of the digital signal is determined using a perceptual model; ~~and~~

multiplexing the core-layer bitstream and the enhancement-layer bitstream, thereby generating the scalable bitstream;

wherein the error signal is represented in bit-planes comprising a plurality of bit-plane symbols, and wherein the bit-planes and the bit-plane symbols are scanned and coded during bit-plane coding of the error signal in a sequence based on the perceptual information of the digital signal, such that bit-plane symbols of the bit-planes which are more perceptually important are coded first;

wherein at least the following information is determined as the perceptual information of the digital signal by the perceptual model[:]; and

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) ~~of the error signal at which the bit-plane coding of the error signal starts M(s)~~ that contains a non-zero bit-plane symbol for the frequency band s of the error signal.

34. (currently amended) A method for decoding a scalable bitstream into a digital signal comprising:

de-multiplexing the scalable bitstream into a core-layer bitstream and an enhancement-layer bitstream;

decoding and de-quantizing the core-layer bitstream to generate a core-layer signal;

bit-plane decoding the enhancement-layer bitstream based on perceptual information of the digital signal; and

performing an error mapping based on the bit-plane decoded enhancement-layer bitstream and the de-quantized core-layer signal, resulting in a reconstructed transformed signal, wherein the reconstructed transformed signal is the digital signal;

wherein the enhancement-layer bitstream is bit-plane decoded to generate a plurality of bit-planes comprising a plurality of bit-plane symbols in a sequence based on the perceptual information of the digital signal, thereby generating the bit-plane decoded enhancement-layer bitstream;

wherein at least the following information is received as the perceptual information of the digital signal:

for each frequency band s of a plurality of frequency bands, the maximum bit-plane M(s) that contains a non-zero bit-plane symbol for the frequency band s of the error signal ~~the bit-plane which corresponds to the~~

~~enhancement layer bitstream when the bit-plane decoding of the enhancement layer bitstream starts, which bit-plane is specified by a number M(s)~~.